# INSTALLATION AND ADJUSTMENT

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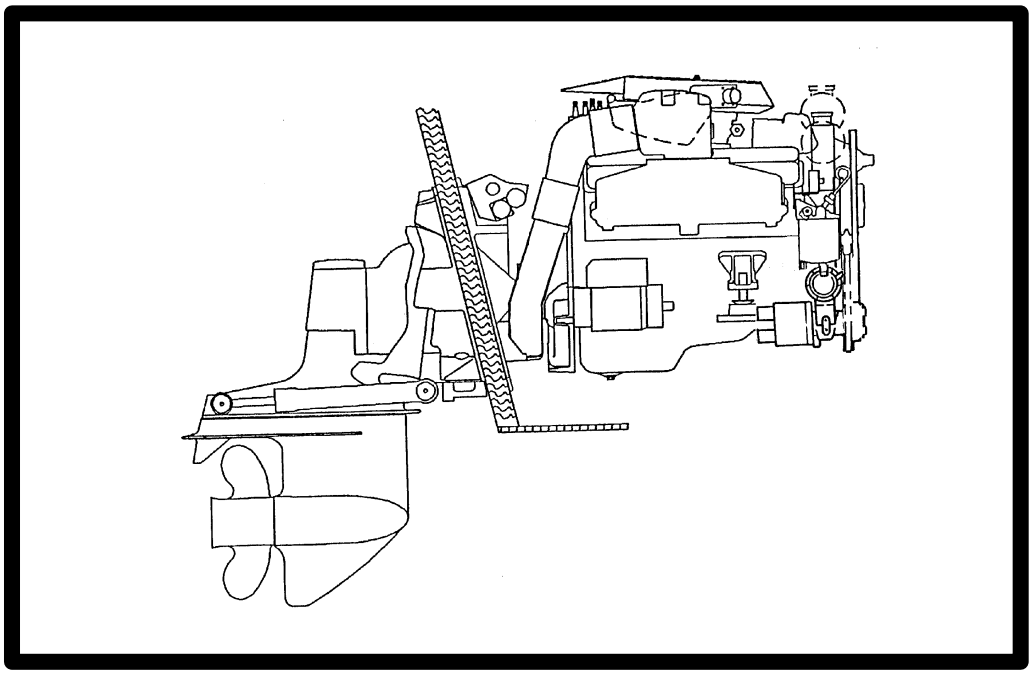

## MCM MODELS

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# Torque Specifications

**IMPORTANT: Listed below are the torque specifications for those fasteners which have a specific torque value. Tighten all other fasteners (not listed) securely.**

## 3.0L and 3.0LX

| Description | | Lb. Ft. (N m) | Lb. In. (N·m) |
|---|---|---|---|
| Rear Engine Mounts Bolts/Nut | | 30-40 lb. ft.(47-54N·m) | |
| Power Trim Cylinders to Anchor Pins Nuts | | Tighten until they bottom out | |
| Shift Cable End Guide Attaching Nuts | | Tighten each nut until it bottoms out against flat washer,then back off 1/2 turn | |
| Stern Drive Unit To Bell Housing Attaching Nuts | | 50 lb. ft (68 N·m) | |
| Power Steering-Hydraulic Hose Fittings: | Large | 20-25 lb. ft. (27-34 N·m) | |
| | Small | | 96-108 lb.in. (11-12 N·m) |

## MCM V-6 and V-8

| Fastener Location | | Lb. Ft. (N m) |
|---|---|---|
| Drive Unit Shift Cable | Cable Barrel | Spread Cotter Key |
| | Cable End Guide | See Note |
| Hose Clamps | | Securely |
| Rear Engine Mounts | | 35-40 (47-54) |
| Power Steering Fluid Hoses Fittings | | 20-25 (27-34) |
| Remote Control Shift Cables | Cable Barrel | Securely |
| | Cable End Guide | See Note |
| Remote Control Throttle Cable | Cable Barrel | Securely |
| | Cable End | See Note |

Note: Tighten, then back nut off one full turn

## MCM V-8 With Drive Shaft Extensions

| Fastener Location | | Lb. Ft. (N·m) |
|---|---|---|
| Bearing Support (Tailstock) to Inner Transom Plate | | 35-40 (47-54) |
| Driveshaft | | 50 (68) |
| Driveshaft Shield | | 30 (41) |
| Extension Housing to Flywheel Housing | | 30 (41) |
| Flywheel Housing | | 30 (41) |
| Rear Engine Mount Bracket | | 50 (68) |
| Power Steering Fluid Hose Fitting | | 20-25 (27-34) |
| Remote Control Throttle Cable | Cable Barrel | Securely |
| | Cable End Guide | See Note |

NOTE: Tighten ,then back off nut one full turn

## Tools/Lubricants/Adhesives/Sealants

| | |
|---|---|
| 92-816391A4 | Quicksilver Engine Coupler Grease |
| 92-86154A1 | Quicksilver 2-C-4 Marine Lubricant |
| 92-25711--2 | Quicksilver  Liquid Neoprene |
| Obtain Locally | Loctite  Pipe Sealant with Teflon |
| 91-805475A1 | Engine Alignment Tool |

## MCM Engine Removal

**⚠ WARNING**

**Disconnect BOTH battery cables from battery before proceeding with removal, to prevent possible injury or damage to equipment should wires be accidentally shorted.**

1. Disconnect battery cables from battery.
2. Remove instrument harness connector plug from engine harness receptacle after loosening clamp.

**⚠ WARNING**

**Be careful when working on fuel system. Gasoline is extremely flammable and highly explosive under certain conditions. Do not smoke or allow spark or open flame in area. Wipe up any spilled fuel immediately.**

3. Disconnect and suitably plug fuel line to prevent fuel in tank from leaking into bilge.
4. Disconnect throttle cable from carburetor or throttle body on EFI models Retain locknuts and hardware.
5. Disconnect bullet connectors of trim sender wires (coming from transom assembly) from engine harness.

NOTE: After wires are disconnected be sure to loosen them from clamps or Sta-Straps retaining them to engine or hoses.

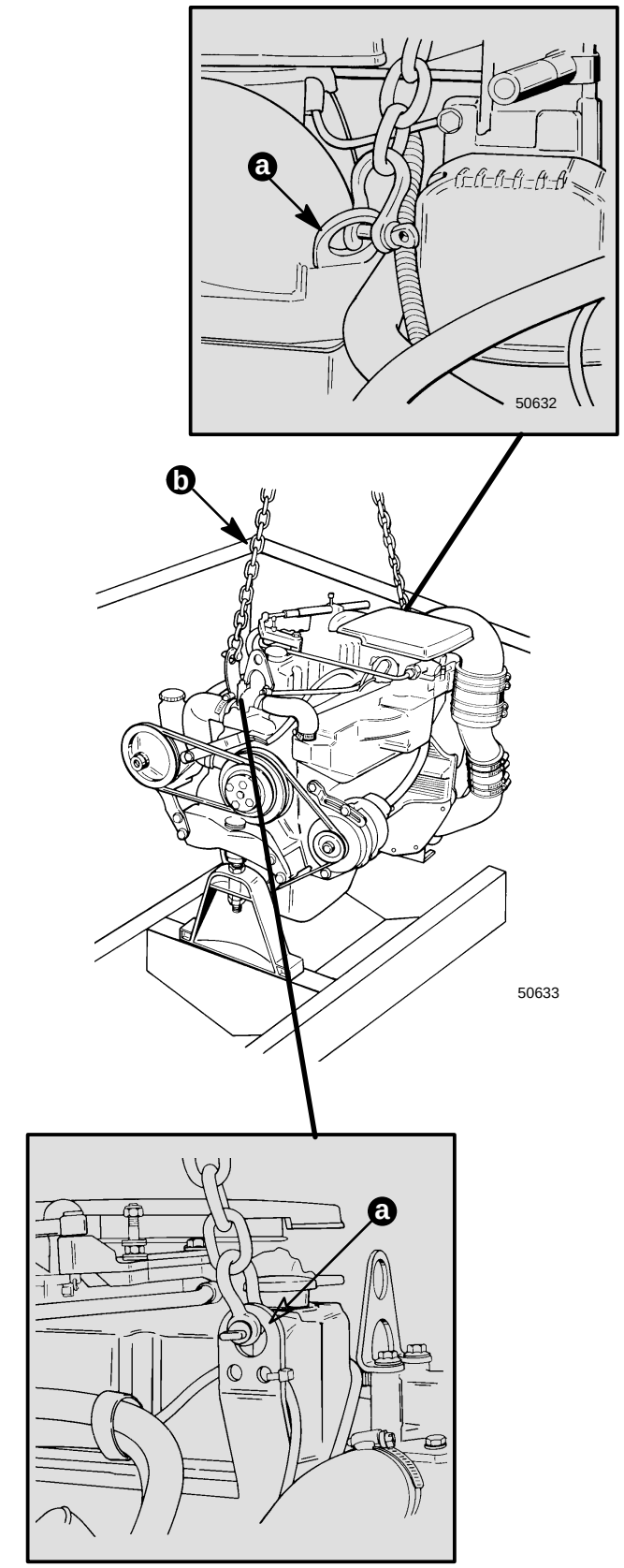
6. Slide sleeves back on BLACK and WHITE/GREEN (or GRAY) wires and disconnect engine harness wires from shift cut-out switch harness.
7. Disconnect MerCathode wires from MerCathode controller if so equipped.
8. Disconnect seawater inlet hose from gimbal housing.
9. Disconnect exhaust elbow hoses (bellows).
10. Remove both shift cables from shift plate. Retain locknuts and hardware.
11. Disconnect any grounding wires and accessories that are connected to engine.
12. Disconnect (and suitably plug) fluid hoses from power steering control valve on transom.

**⚠ CAUTION**

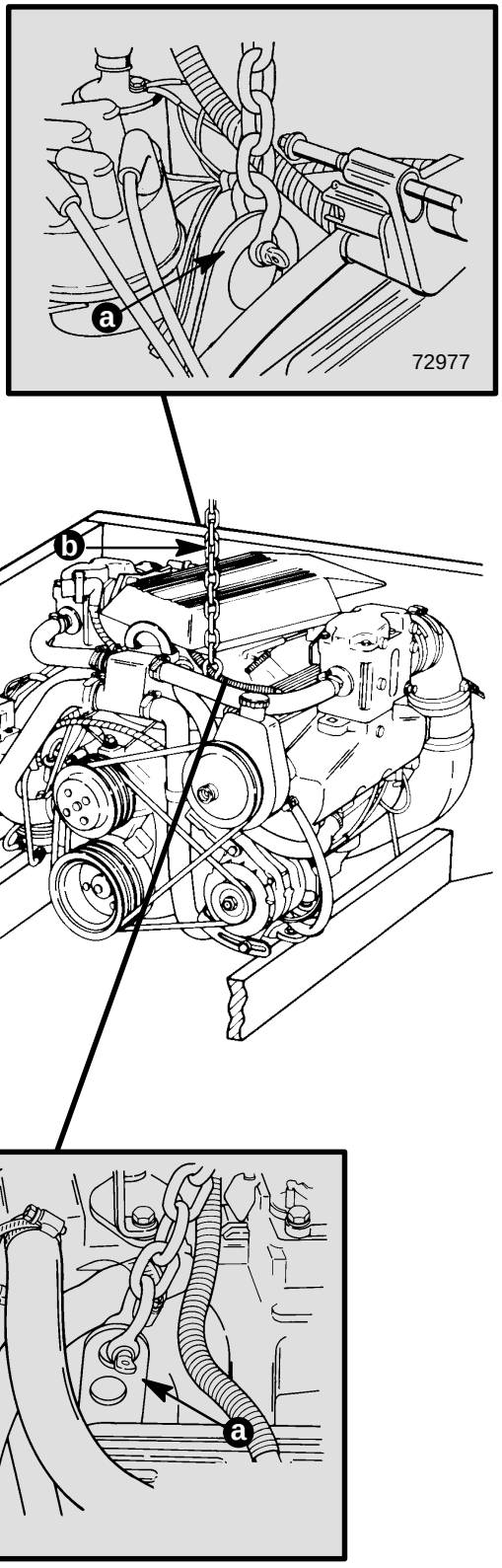
**Center lifting eye is used for engine alignment only (lifting eye on top of thermostat housing). Do not use to lift entire engine.**

**IMPORTANT: A lifting bar must be used on EFI engines to prevent damage to components.**

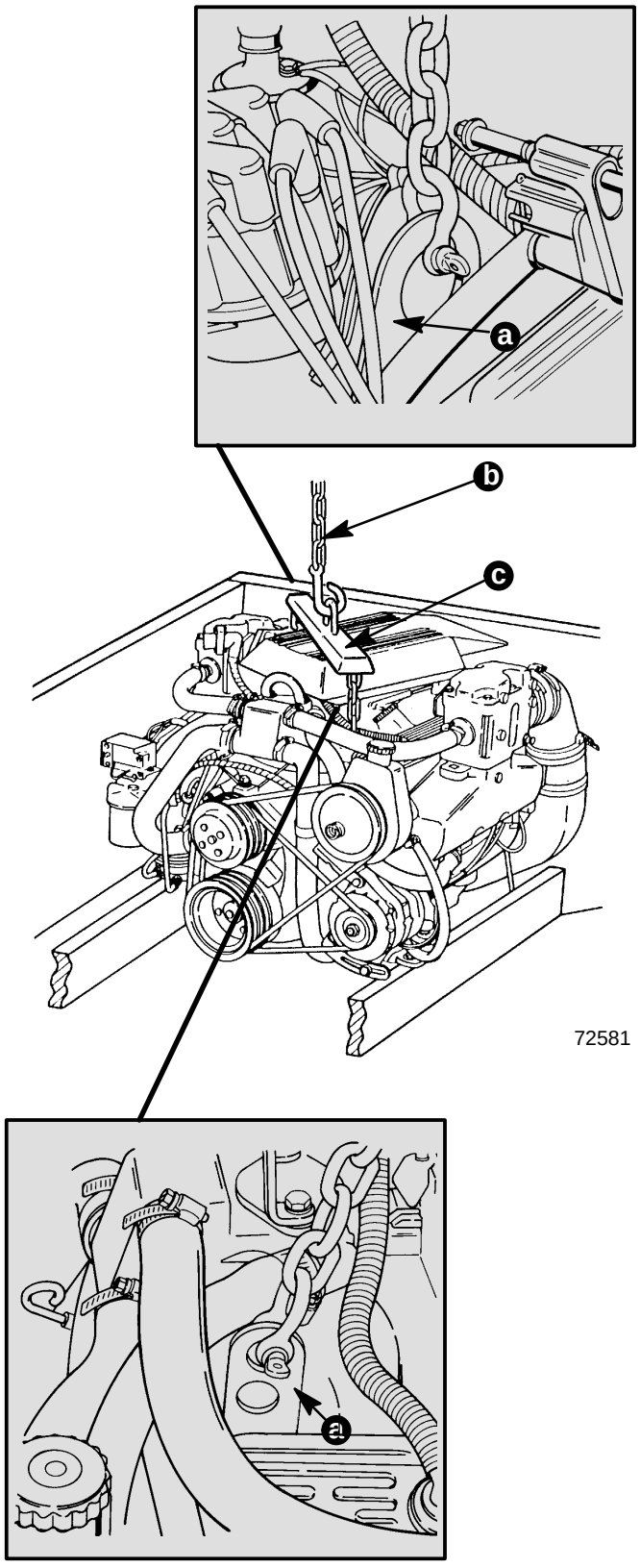
13. Attach a suitable sling to lifting eyes on engine and adjust so that engine is level when suspended.




MCM 4 Cylinder
a.- Lifting Eye
b.- Suitable Sling




MCM V-6
a.- Lifting Eye
b.- Suitable Sling



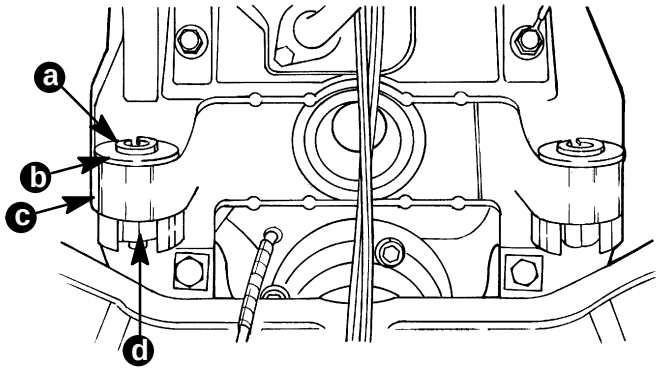

MCM V-8(Typical)
a.- Lifting Eye
b.- Suitable Sling
c.- Lifting Bar

**IMPORTANT: A lifting bar must be used on EFI engines to prevent damage to components.**

# MCM Installation

## Engine Installation/Alignment

1. Follow instructions “a”-“e”:
   a. Be certain fiber washers (cemented in place) on inner transom plate are present. Inspect fiber washers. Replace if worn or damaged.
   b. Install double wound lockwashers onto inner transom plate inside fiber washer.
   c. Be certain rear engine mount locknuts are in position as shown.
   d. Lubricate exhaust bellows with soap and water to ease installation.
   e. Lubricate engine coupling splines with Quicksilver Engine Coupler Spline Grease.




72023

a - Double Wound Lockwasher
b - Fiber Washer (Cemented in Place)
c - Inner Transom Plate Mount (Engine Support)
d - Locknuts (Engine Mounting Bolts)

**⚠CAUTION**

**Center lifting eye (located on top of thermostat housing) is used for engine alignment only. DO NOT use to lift entire engine.**

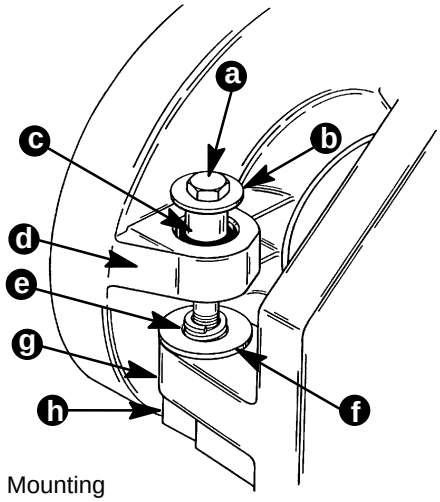
**⚠CAUTION**

**DO NOT allow lifting sling to hook or compress engine components or damage will occur.**

2. Attach a suitable sling to lifting eyes on engine and adjust so that engine is level when suspended. **(Refer to “Removal” section for location of lifting eyes.)**
3. Lift engine into position (in boat), using an overhead hoist.
4. Align rear engine mounts with inner transom plate mounts while simultaneously aligning exhaust tubes with exhaust pipe hoses (bellows).

**IMPORTANT: Engine attaching hardware must be installed in sequence shown.**

5. Install both rear engine mounting bolts and hardware as shown. Torque to 35-40 lb. ft. (47-54 N·m).



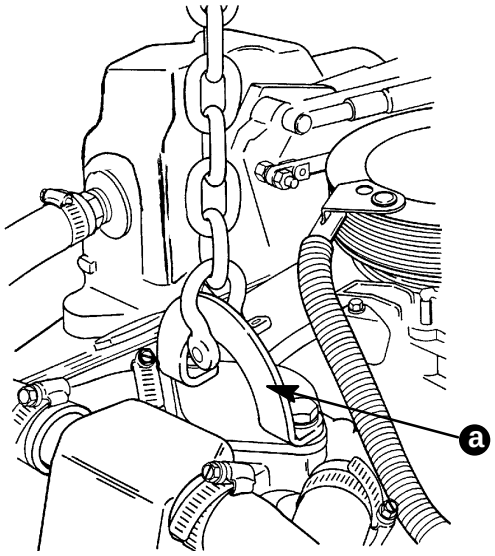

72535

a - Bolt, Rear Engine Mounting
b - Washer, Large Steel
c - Spacer, Metal
d - Rear Engine Mount
e - Double Wound Lockwasher
f - Fiber Washer
g - Inner Transom Plate Mounts
h - Locknut (Hidden in This View)

**⚠CAUTION**

**When lowering engine into position DO NOT set engine on shift cable. Shift cable outer casing can be crushed causing difficult or improper shifting.**

6. Set engine down on stringers and relieve hoist tension. Disconnect sling from engine lifting eyes and relocate sling to center lifting eye.




72024

a - Center Lifting Eye

**⚠CAUTION**

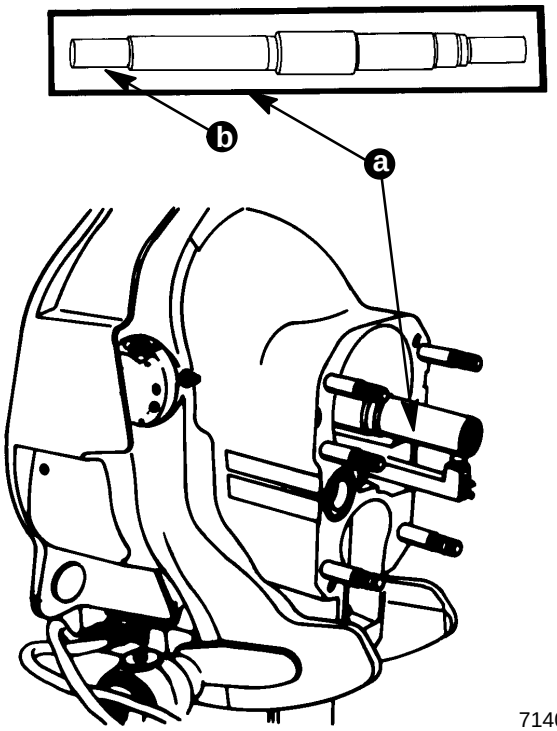
**DO NOT use an alignment tool from another manufacturer. Alignment tools other than Quicksilver Alignment Tool 91-57797A3, may cause improper alignment and damage to gimbal bearing and/or engine coupler.**

**⚠CAUTION**

**To avoid damage to gimbal bearing, engine coupler, or alignment tool:**

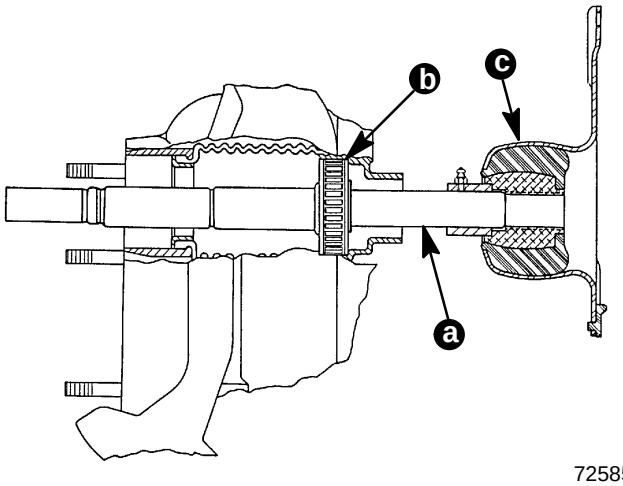
- **DO NOT attempt to force alignment tool!**
- **DO NOT raise or lower engine with alignment tool inserted (or partially inserted) in gimbal bearing or engine coupler.**

7. Align engine as follows:
   a. Attempt to insert solid end of Quicksilver Alignment Tool through gimbal bearing and into engine coupler splines. If it will not insert easily proceed to the following.
   b. While observing the above precautions, CAREFULLY raise and lower front of engine with hoist, as required, until tool will SLIDE FREELY all the way in and out of engine coupler splines.




71401

a - Alignment Tool (Use Only Quicksilver Alignment - Tool (P/N 91-805475A1)
b - Insert This End of Alignment Tool through Gimbal Housing Assembly




72585

a - Alignment Tool
b - Gimbal Bearing
c - Engine Coupler

NOTE: Engine couplers may differ from drawing.

**IMPORTANT: Turn both front engine mount adjustment nuts an equal amount in direction required to align engine.**

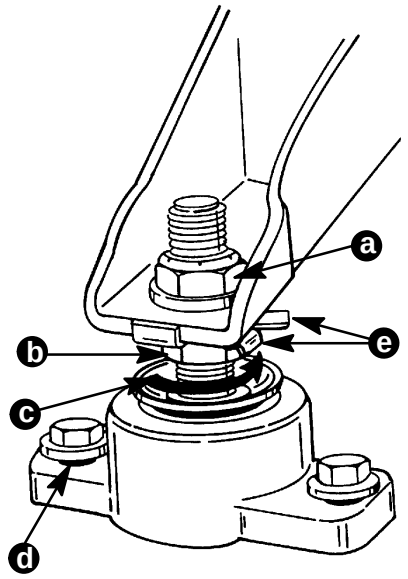
c. Adjust front engine mounts until they rest on boat stringers.

d. Relieve hoist tension entirely and fasten both front mounts to boat stringer using appropriate hardware (lag bolts or thru-bolts, etc).

e. Recheck alignment with alignment tool. Tool must enter coupler splines freely. If not, readjust front mounts.

f. When alignment is correct, tighten locknut or nut with lockwasher on each mount securely.

g. Bend tab washer down against flat on adjusting nut.




72536

a - Nut and Lockwasher (350 Magnum - Locknut Only)
b - Adjustment Nut
c - Turn Adjustment Nut in This Direction (Counterclockwise) to Raise Front of Engine
d - Slotted Hole toward Front of Engine
e - Tab Washer

h. Remove alignment tool if not already removed.

# Engine Connections

## Fuel Supply Connections

**⚠WARNING**

**Avoid gasoline fire or explosion. Improper installation of brass fittings or plugs into fuel pump or fuel filter base can crack casting and/or cause a fuel leak.**

- **Apply #592 Loctite Pipe Sealant with Teflon to threads of brass fitting or plug. DO NOT USE TEFLON TAPE.**
- **Thread brass fitting or plug into fuel pump or fuel filter base until finger tight.**
- **Tighten fitting or plug an additional 1-3/4 to 2-1/4 turns using a wrench. DO NOT OVER-TIGHTEN.**
- **Install fuel line. To prevent over-tightening, hold brass fitting with suitable wrench and tighten fuel line connectors securely.**
- **Check for fuel leaks.**

1. Connect fuel line from fuel tank(s) to engine. Make certain connections are secure. Check for leaks.
2. Connect throttle cable using hardware retained and adjust as follows:

   a. **On Engines With Carburetor:**

      (1) Place remote control handle(s) in neutral, idle position.

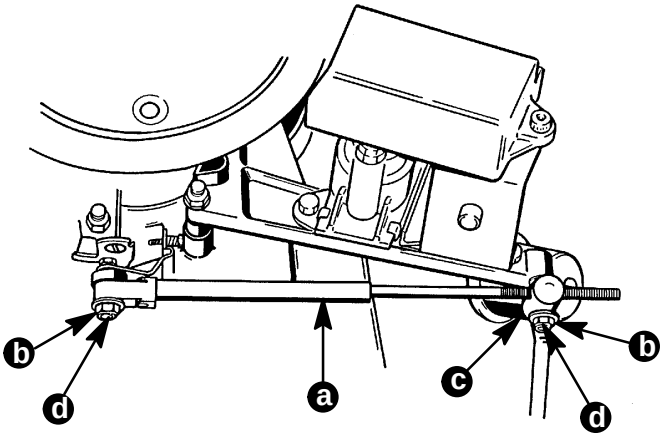
**IMPORTANT: Be sure that cable is routed in such a way as to avoid sharp bends and/or contact with moving parts. DO NOT fasten any items to throttle cable. Outer cable must be free to move when cable is actuated.**

(2) Install cable end guide on throttle lever, then push cable barrel lightly toward throttle lever end. (This will place a slight preload on cable to avoid slack in cable when moving remote control lever.) Adjust barrel on throttle cable to align with anchor stud.

(3) Secure throttle cable with hardware (retained) as shown. Tighten cable end guide locknut until it bottoms out and then back off one full turn. Tighten cable barrel securely. DO NOT OVER-TIGHTEN, as cable must pivot freely.

# Throttle Cable Adjustments

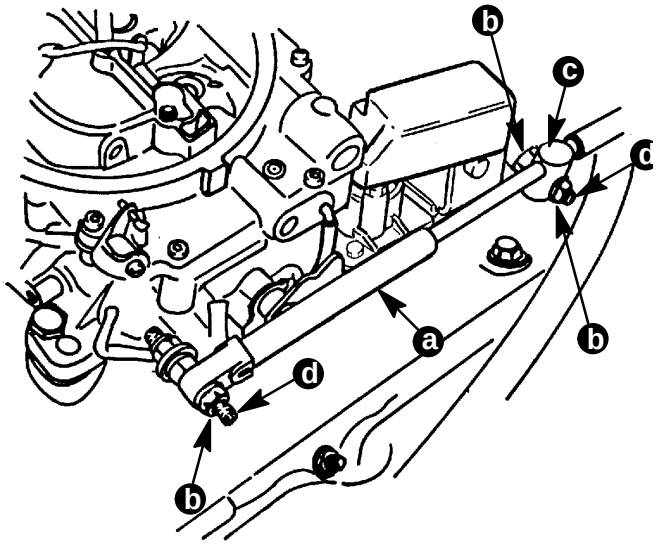
## 2 BARREL CARBURETOR




72013

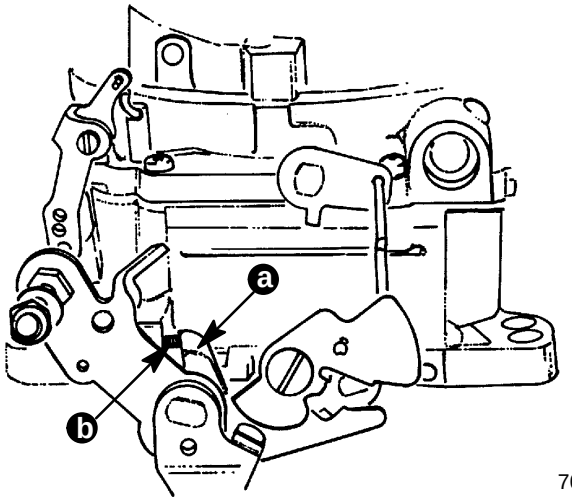
a - Cable End Guide
b - Attaching Hardware (DO NOT Over-Tighten)
c - Cable Barrel
d - Anchor Studs

## WEBER 4 BARREL CARBURETOR




72014

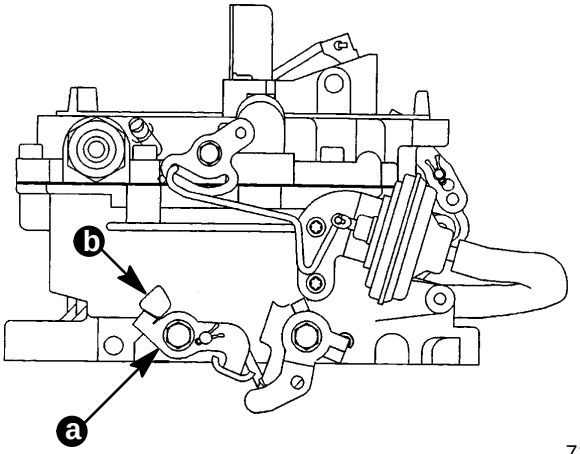
a - Cable End Guide
b - Attaching Hardware (DO NOT Over-Tighten)
c - Cable Barrel
d - Anchor Studs




70392

a - Throttle Lever [Contacts (b) in Idle Position]
b - Idle Speed Adjustment Screw

### Idle Position




71159

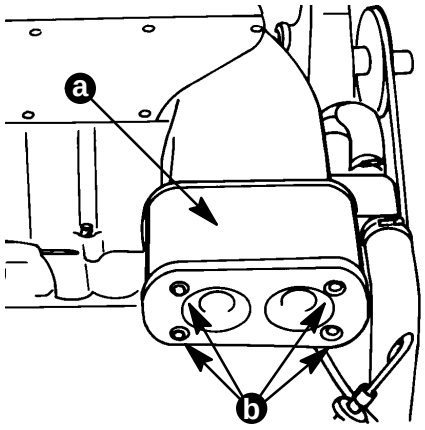
a - Throttle Shaft Lever [Contacts (b) at W.O.T. Position] b Carburetor Body Casting

### Wide-Open-Throttle Position

3. **On Engines With Electronic Fuel Injection:**

   a. Place remote control handle(s) in neutral idle position.

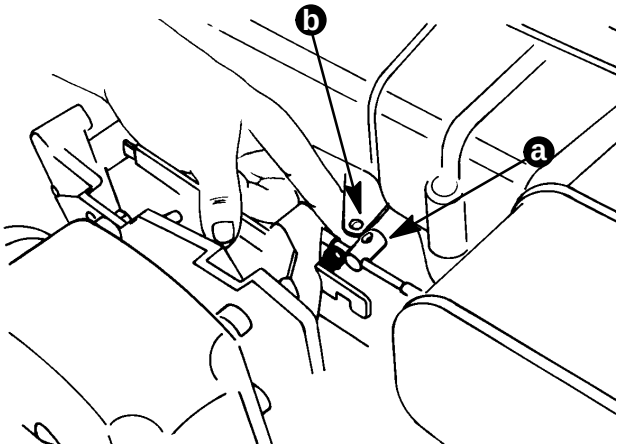
   b. Remove flame arrestor.



71481

a - Flame Arrestor
b - Locknuts

   c. Install cable end guide on throttle lever, then push cable barrel end lightly toward throttle lever end. (This will place a slight preload on shift cable to avoid slack in cable when moving remote control lever). Adjust barrel on throttle cable to align with hole in anchor plate. Ensure hole in barrel positions cable as shown.



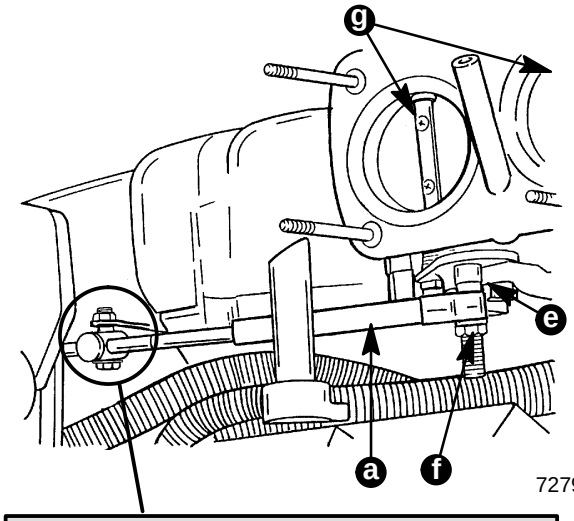
71711

a - Cable Barrel
b - Anchor Plate

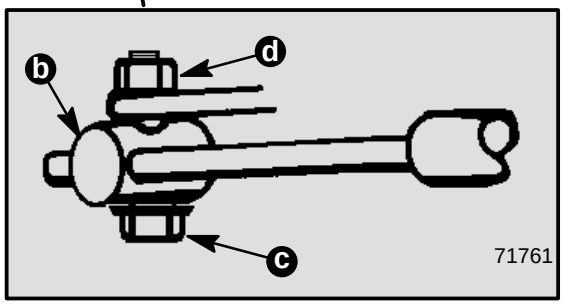
   d. Secure throttle cable with hardware as shown and tighten securely.

   e. Place remote control throttle level in the wide open throttle (W.O.T.) position. Check to ensure that throttle plates are completely open.

   (1) Return remote control throttle lever to idle position and check to ensure that throttle plates are completely closed.

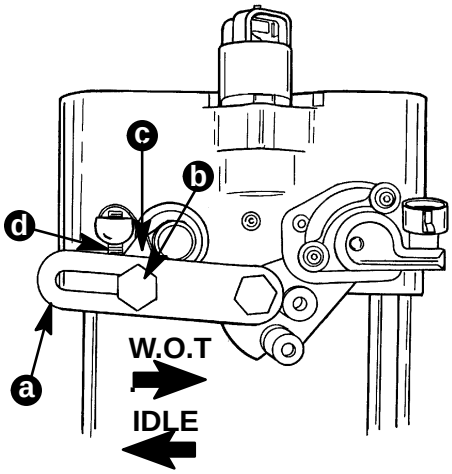


72791



71761

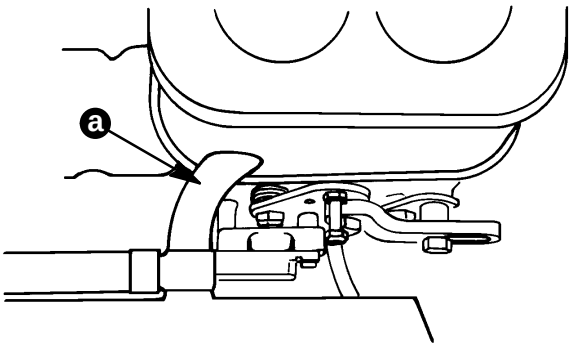
a - Cable End Guide
b - Cable Barrel
c - Bolt
d - Locknut
e - Throttle Lever
f - Flat Washer and Locknut
g - Throttle Plates



72794

a - Throttle Lever
b - Positive Stop Screw
c - Throttle Stop Lever
d - Throttle Stop Screw

4. Reinstall flame arrestor and tighten locknuts securely. Position crankcase vent hose against flame arrestor as shown.




71764

a - Crankcase Vent Hose

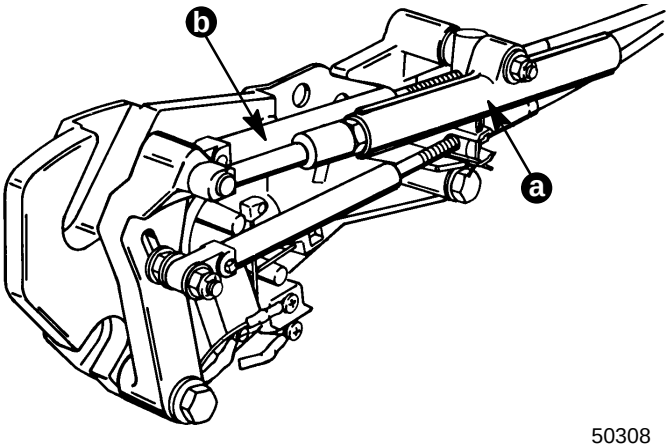
## Shift Cable Adjustment For Alpha Drives

**IMPORTANT: Shift cable adjustment for a right hand (RH) rotation drive unit is different than the procedure for adjusting a left hand (LH) rotation drive unit. Be sure to refer to the appropriate procedure when performing the following steps.**

**IMPORTANT: Drive unit must be installed.**

**IMPORTANT: DO NOT run engine.**

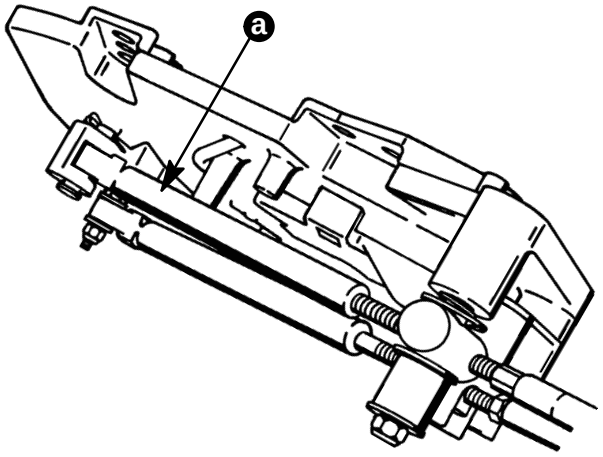
1. Remove remote control shift cable and shift assist assembly (if installed).




50308

a - Shift Assist Assembly
b - Remote Control Shift Cable

**WITH SHIFT ASSIST ASSEMBLY**

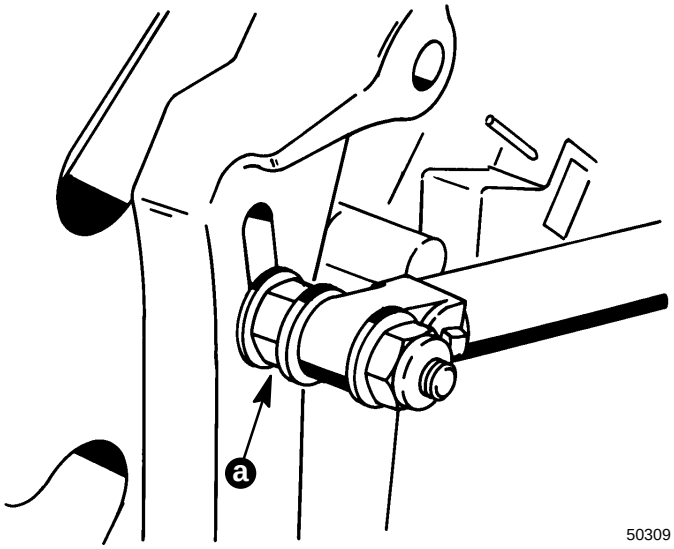



50310

a - Remote Control Shift Cable

**WITHOUT SHIFT ASSIST ASSEMBLY**

2. Ensure shift lever adjustable stud is at bottom of slot. If necessary, loosen stud and move it to bottom of slot, then retighten stud.




50309

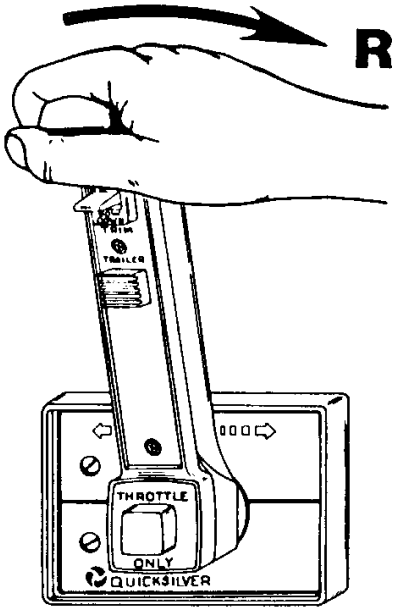
a - Adjustable Stud

3. Shift Remote Control as Stated in ”a”or ”b” following:

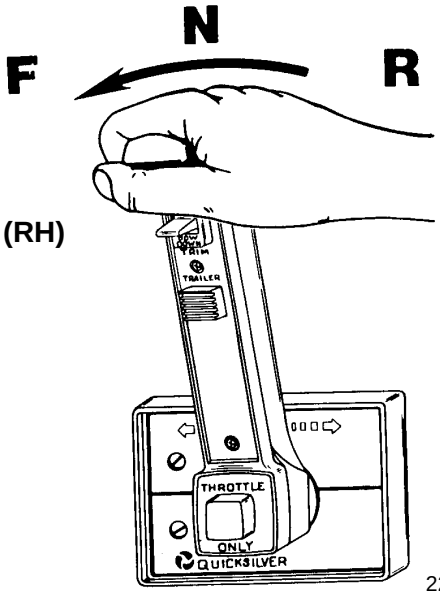
   a. **Right Hand (RH) Rotation Drive Unit -** forward gear, past detent, into wide-open-throttle position.

   b. **Left Hand (LH) Rotation Drive Unit -** Reverse gear, past detent, into wide-open-throttle position.

**(LH)**




22909

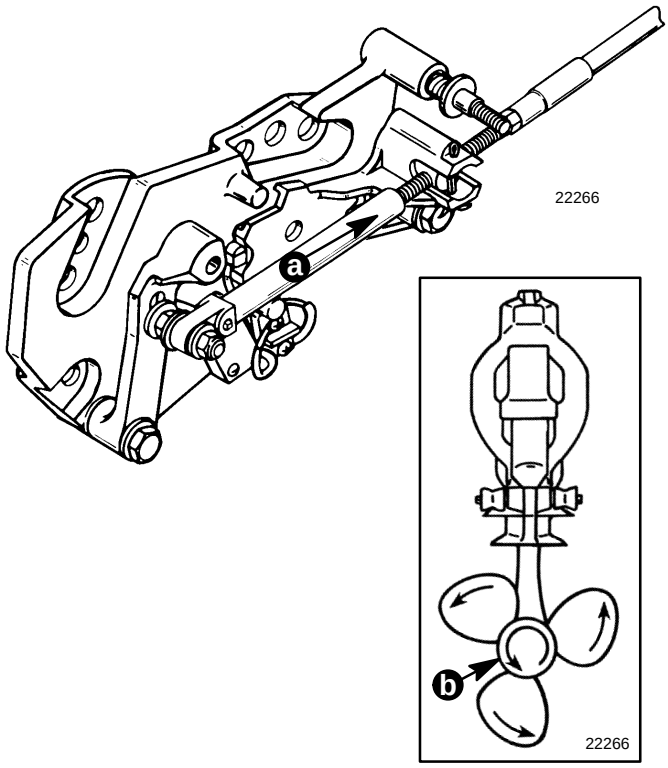



**(RH)**

22909

4. Place drive unit into gear by pushing in on the drive unit shift cable, while simultaneously rotating the propeller shaft counterclockwise until the shaft stops, to ensure full clutch engagement. Maintain a light pressure on the drive unit shift cable to hold it at the end of its travel (this removes all slack from the cable).

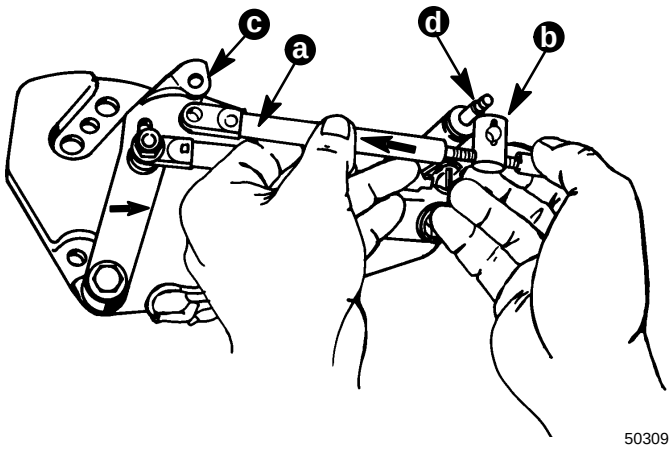
**IMPORTANT: Do not use excessive force when holding pressure on the drive unit shift cable. Excessive force would be indicated by movement of the shift cutout switch.**




22266

a - Drive Unit Shift Cable-Push in
b - Propeller Shaft-Rotate Counterclockwise

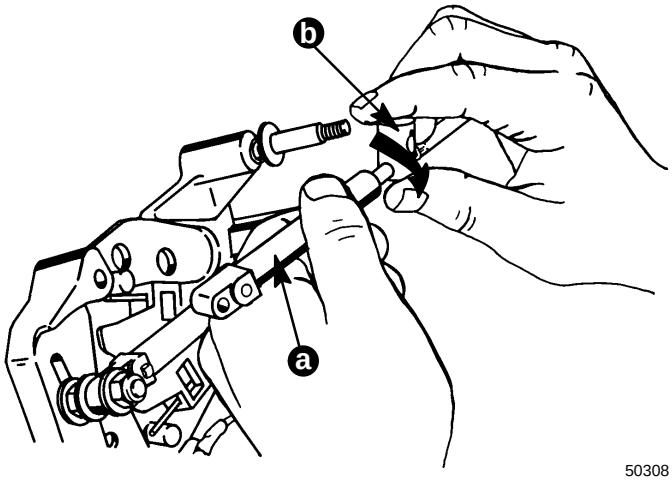
5. Lightly pull on the remote control shift cable end guide (to remove the slack from the remote control and cable) and adjust brass barrel as necessary to align attaching points with shift lever clevis pin hole and stud. Be sure to maintain light pressure on the drive unit shift cable.



50309

a - End Guide
b - Brass Barrel
c - Shift Lever Clevis Pin Hole
d - Stud

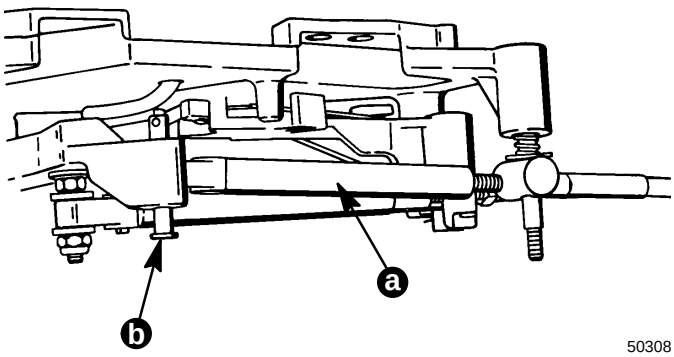
6. After cable has been aligned, turn brass barrel 4 turns **away** from cable end guide.



50308

a - End Guide
b - Brass Barrel

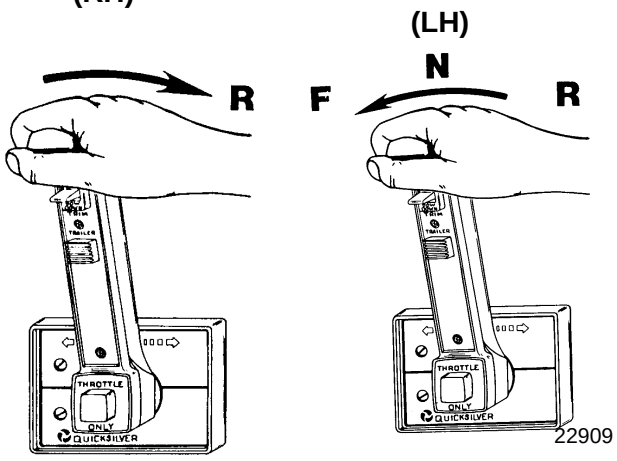
7. Temporarily install remote control shift cable on stud and install clevis pin.



50308

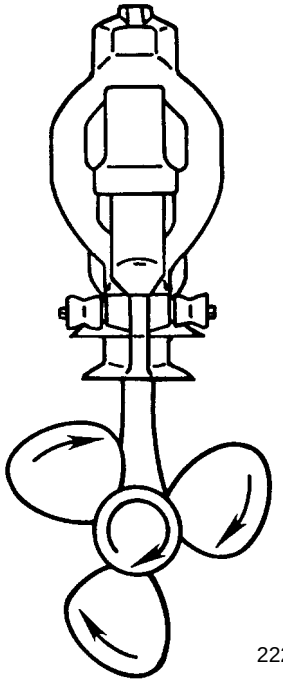
a - Remote Control shift Cable
b - Clevis Pin

8. Shift remote control as stated in ”a” or ”b” following:
   a. **Right Hand (RH) Rotation Drive Unit -** reverse gear, past detent, into wide-open-throttle position.
   b. **Left Hand (LH) Rotation Drive Unit -** forward gear, past detent, into wide-open-throttle position.



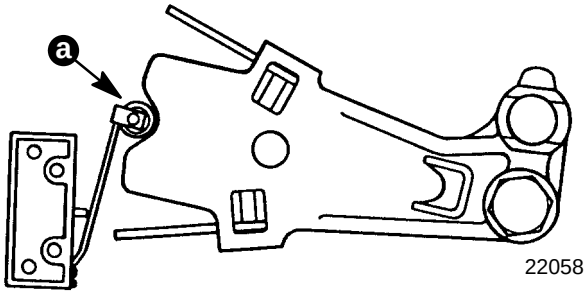
22909

Simultaneously rotate the propeller shaft clockwise until the shaft stops to ensure full clutch engagement.




Rotate Propeller Shaft Clockwise

9. Check shift cutout switch lever position. Roller must be centered.



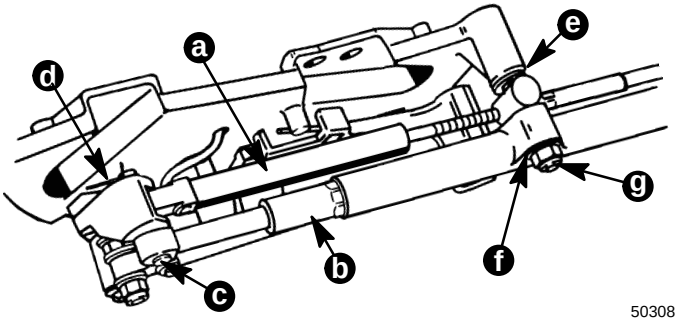

a - Shift Cutout Switch Roller

10. If roller is not centered:
    a. Check to ensure adjustable stud is at bottom of slot in shift lever.
    b. Check remote control for proper shift cable output [3 in. (76 mm) ± 1/8 in. (3 mm)]. Refer to "Installation Requirements."
    c. If "a" and"b" are correct, check to ensure drive unit shift cable is not crushed or kinked. (If drive unit shift cable is binding, the shift cutout switch roller will move off center when shifting "into" and "out of" forward **and** reverse).

***NOTE:*** *If the shift cable was damaged during installation, install a new shift cable assembly in accordance with stern drive service manual instructions, then repeat shift cable adjustment procedure.*

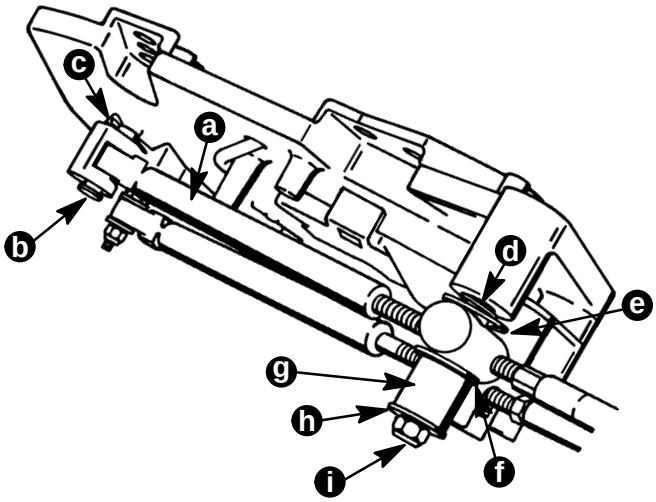
11. After properly adjusting remote control shift cable, reinstall cable and shift assist assembly (if applicable) and secure as shown.

    If the shift assist assembly attaching points will not align, push in or pull out on the end of the shift assist assembly to install. Do not attempt to readjust shift cable.




a - Remote Control Shift Cable
b - Shift Assist Assembly
c - Clevis Pin
d - Cotter Pin (Not Seen) (Spread Both Prongs)
e - Large I.D. Washer with Spring Beneath (Not Seen)
f - Small I.D. Washer
g - Locknut (Tighten Until Bottomed)

**WITH SHIFT ASSIST ASSEMBLY**




a - Remote Control Shift Cable
b - Pin
c - Cotter Pin
d - Spring Beneath Washer
e - Washer
f - Washer
g - Spacer
h - Washer
i - Locknut (Tighten Until Bottomed, Then Back Off One Turn)

**WITHOUT SHIFT ASSIST ASSEMBLY**

**IMPORTANT: If an extra long remote control shift cable is used, or if there are a large number of bends in the remote control shift cable, or if remote control has inadequate output travel, an additional adjustment may be necessary. Refer to step 12 or 13 as applicable.**

12. **Remote Control with Single Lever Shift/ Throttle Control:**

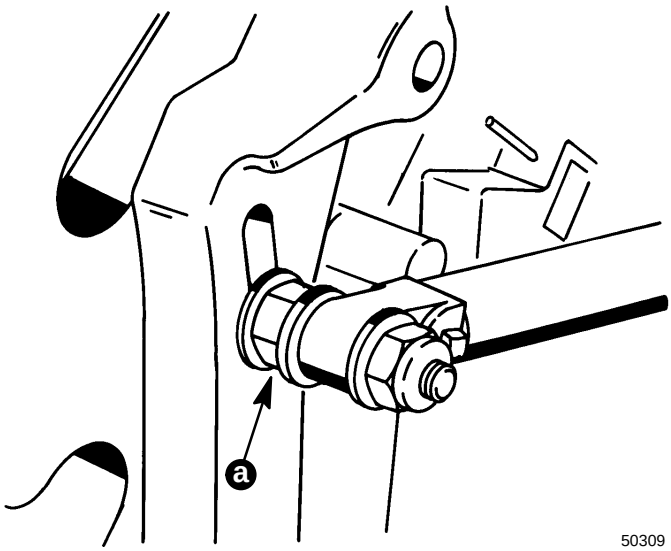
    a. **Right Hand (RH) propeller rotation drive unit -** Shift the remote control into reverse gear wide-open-throttle position while simultaneously rotating propeller shaft clockwise. Clutch should engage and cause the propeller shaft to lock. If the clutch does not engage, loosen the adjustable stud on the shift lever and move it upward in the slot until the clutch engages the reverse gear. Retighten the stud. Shift the remote control several times and stop in reverse to recheck the shift cutout switch position. Roller must be centered.

    b. **LEFT HAND (LH) propeller rotation drive unit -** Shift the remote control into forward gear, wide-open-throttle position while simultaneously rotating the propeller shaft clockwise. The clutch should engage and cause the propeller shaft to lock. If the clutch does not engage, loosen the adjustable stud on the shift lever and move it upward in the slot until the clutch engages the forward gear. Retighten the stud. Shift remote control several times and stop in forward to recheck the shift cutout switch position. The roller must be centered.

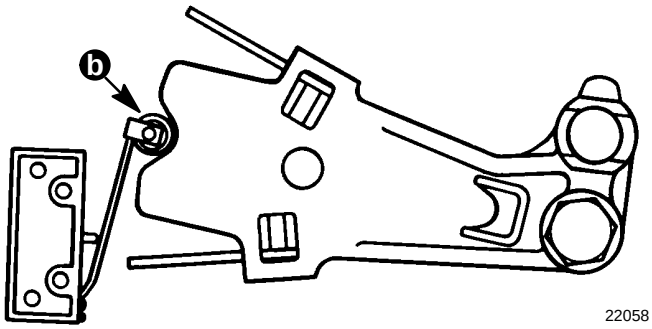
13. **Remote Control with Separate Shift and Throttle Levers:**

    a. **RIGHT HAND (RH) propeller rotation drive unit -** While turning the propeller shaft clockwise, move the remote control shift handle into full reverse position. The clutch should engage before the shift lever comes to a stop. If the clutch does not engage, loosen adjustable stud on the shift lever and move it upward in the slot until clutch engages with reverse gear. Retighten the stud. Shift remote control several times and stop in reverse to recheck shift cutout switch position. Roller must be centered.

    b. **LEFT HAND (LH) propeller rotation drive unit -** While turning the propeller shaft clockwise, move the remote control shift handle into the full forward position. Clutch should engage before the shift lever comes to a stop. If the clutch does not engage, loosen adjustable stud on the shift lever and move it upward in the slot until the clutch engages the forward gear. Retighten stud. Shift remote control several times and stop in forward to recheck shift cutout switch position. Roller must be centered.




50309




22058

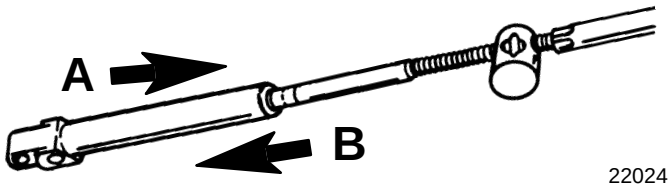
a - Adjustable Stud
b - Shift Cutout Switch Roller

# Shift Cables Installation and Adjustments For Bravo Drives

**NOTE:** Using Adjustment Tool (91-12427), shift cables can be adjusted without or with the stern drive installed, using the following procedure.

**IMPORTANT: <u>For Bravo One and Two:</u> Drive unit propeller rotation is determined by the shift cable installation in the remote control.**

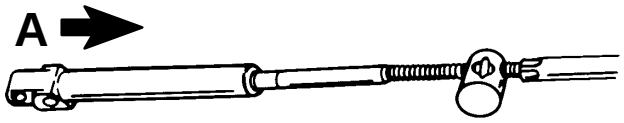
- **If shift cable end guide moves in direction "A," when control lever is placed in Forward, remote control is setup for RIGHT HAND (RH) propeller rotation.**
- **If shift cable end guide moves in direction "B," when control lever is placed in Forward, remote control is setup for LEFT HAND (LH) propeller rotation.**




22024

**BRAVO ONE AND TWO**

**IMPORTANT: <u>For Bravo Three:</u> Front propeller on Bravo Three drive unit is always LH Rotation and rear propeller is always RH Rotation. Shift cable end guide must move in direction "A", when control lever is placed in Forward gear position.**

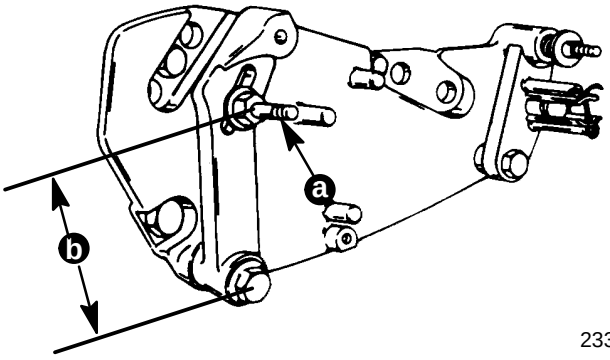



71656

**BRAVO THREE**

**IMPORTANT: When installing shift cables, be sure that cables are routed in such a way as to avoid sharp bends and/or contact with moving parts. DO NOT fasten any items to shift cables.**

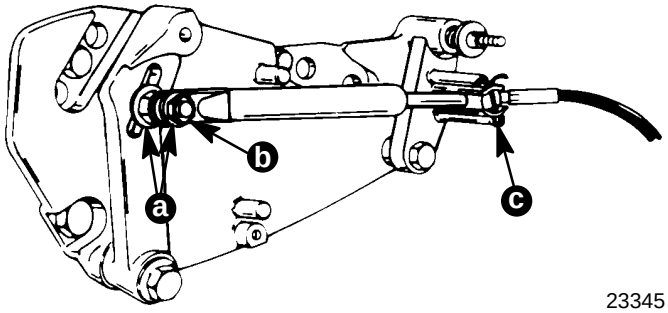
1. Install shift cable into remote control. (Refer to appropriate remote control instructions.)
2. Loosen stud and move it to dimension, as shown. Retighten stud.




23345

a - Stud
b - 3 in. (76mm) - Center of Pivot Bolt to Center of Stud

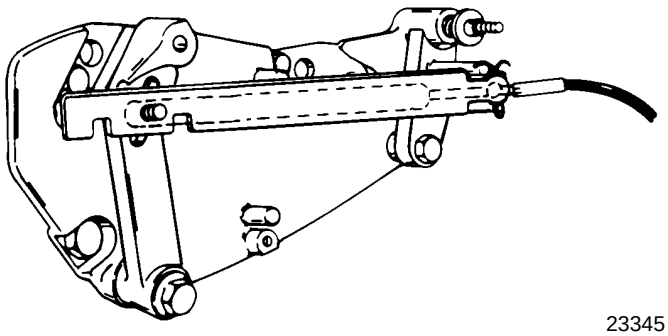
3. Install drive unit shift cable.




23345

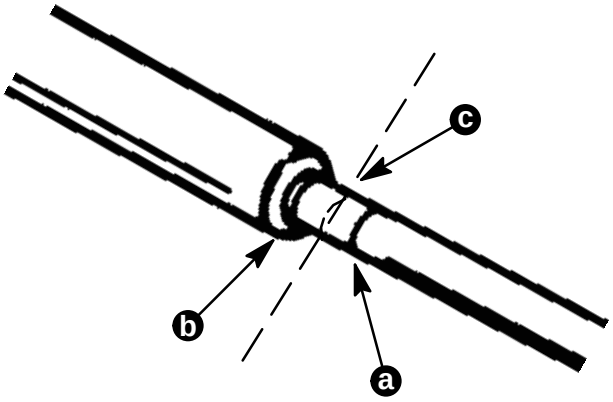
a - Washers (2)
b - Lock Nut - Tighten Until Contact, Then Back Off 1/2 Turn
c - Cotter Pin - Insert from Bottom and Spread Both Ends

4. Place adjustment tool over drive unit shift cable, as shown. Hold tool in place, using a piece of tape over the barrel retainer.



23345

5. Locate center of remote control and control cable play (backlash).
   a. Shift remote control to neutral.
   b. Push in on control cable end with enough pressure to remove play, and mark position “a” on tube.
   c. Pull out on control cable end with enough pressure to remove play and mark position “b” on tube.
   d. Measure distance between marks “a” and “b” and mark position “c” half-way between marks “a” and “b.”




71656

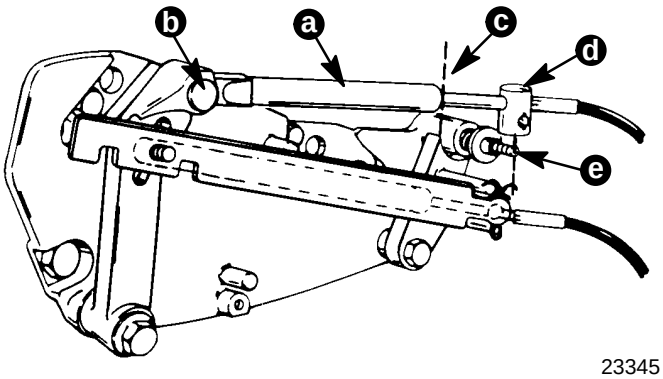
**IMPORTANT: Be sure to keep center mark “c” aligned with control cable end guide edge when making the following adjustment.**

6. Adjust control cable as follows:
   a. Temporarily install control cable end guide into shift lever, and insert anchor pin.
   b. Adjust control cable barrel so that hole in barrel centers with vertical centerline of stud. Ensure that backlash center mark is aligned with edge of control cable end guide.

## ⚠CAUTION

**DO NOT attempt to install or remove control cable barrel from stud, without first removing end guide anchor pin from shift lever, and removing cable. Attempting to bend control cable to install or remove barrel, will place undue stress on cable end guide and shift lever, and damage to both could occur.**

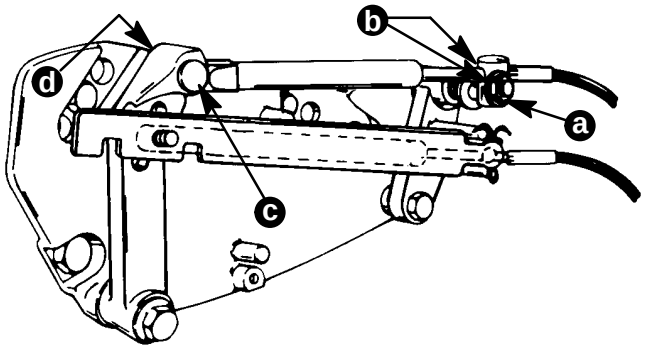
   c. Remove control cable end guide from shift lever, by removing anchor pin.




23345

a - Control Cable End Guide
b - Anchor Pin
c - Backlash Center
d - Control Cable Barrel
e - Stud

7. Install control cable.




23345

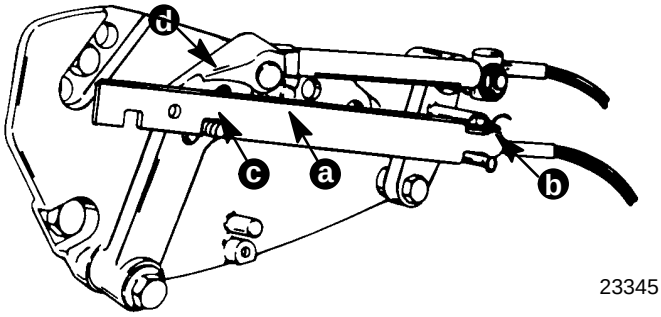
a - Lock Nut - Tighten Until Bottomed Out
b - Washers - Both Sides of Barrel
c - Anchor Pin
d - Cotter Pin (Not Visible) - Spread Both Ends

8. Remove adjustment tool.
9. Shift remote control lever into full forward position. Place end of adjustment tool in barrel retainer.

RH ROTATION BRAVO ONE AND TWO, AND ALL BRAVO THREE MODELS: Rear slot in tool should fit over shift lever stud.

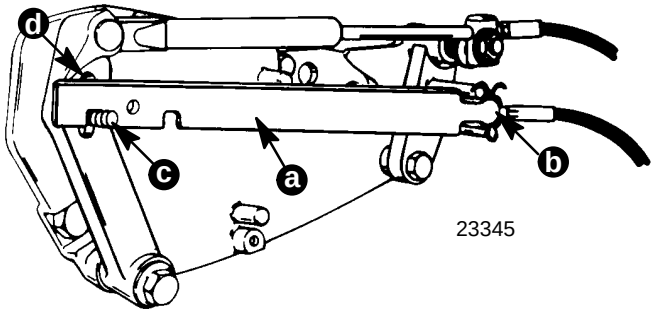
LH ROTATION BRAVO ONE AND TWO MODELS: Forward slot in tool should fit over shift lever stud.

If slot does not fit over stud, loosen shift lever stud and slide stud up or down, until slot in tool fits over stud. When adjustment is correct, retighten stud.




23345

**RH ROTATION BRAVO ONE AND TWO, AND ALL BRAVO THREE MODELS**




23345

**LH ROTATION BRAVO ONE AND TWO MODELS**

a - Adjustment Tool
b - Barrel Retainer
c - Shift Lever Stud
d - Shift Lever Adjustment Slot

10. Remove adjustment tool.
11. Lubricate shift cable pivot points with 30W oil.

# MCM With Driveshaft Extension

**Engine Mount Adjustment <u>Was Not Disturbed</u> During Service**

**⚠CAUTION**

**Center lifting eye (located on top of thermostat housing) is used for engine alignment only. DO NOT use to lift entire engine.**

**⚠CAUTION**

**DO NOT allow lifting sling to hook or compress engine components or damage to them will occur.**

1. Attach a suitable sling to lifting eyes on engine and adjust so that engine is level when suspended. **(Refer to "Removal" as previously mentioned in this section for location of lifting eyes.)**
2. Lift engine into approximate position (in boat), using an overhead hoist.
3. Set engine on stringers.
4. Grease drive shaft universal joints with Quicksilver 2-4-C Marine Lubricant.

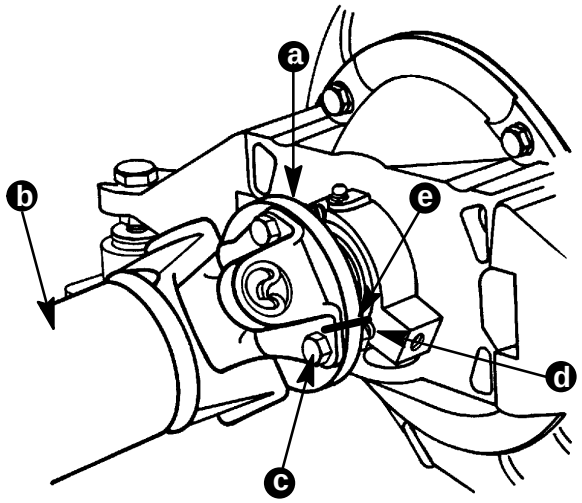
**⚠CAUTION**

**When attaching shaft in next step, BE SURE that the pilot on drive shaft flanges are engaged in input shaft and output shaft flanges. Flanges MUST BE flush to each other prior to tightening screws or screws may come loose during operation.**

**⚠CAUTION**

**Failure to align shaft flanges with matching marks made on disassembly may cause improperly aligned drive unit and extension drive shaft U-joint centerlines resulting in a severe vibration problem.**

5. As shown, attach engine output flange to drive-shaft flange exactly as marked during disassembly. Torque fasteners to 50 lb. ft. (68 N•m).



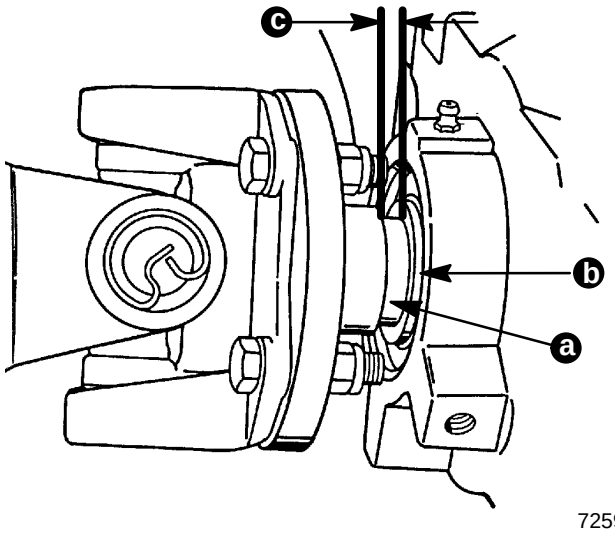

70237

**Engine End Shown**

a - Output Shaft Flange
b - Drive Shaft
c - Screw 7/16-20 x 1-1/2 In. (38 mm) Long (4 Used)
d - Nut 7/16-20 (4 Used)
e - Matching Marks Made upon Disassembly - Aligned

**IMPORTANT: Failure to properly position output shaft flange may result in bearing damage.**

6. Relieve hoist tension from engine, then slide engine fore or aft as needed to obtain 1/4 in. (6 mm) clearance between flange shoulder and extension shaft housing bearing.



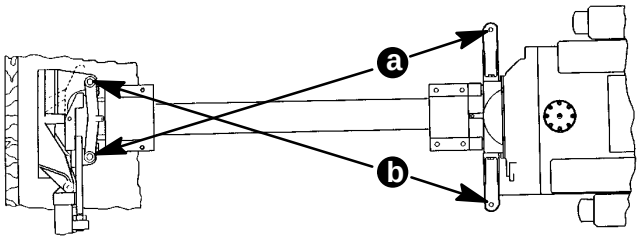

72591

a - Flange Shoulder
b - Bearing
c - 1/4 In. (6 mm)

7. Position engine for correct engine and drive shaft lateral alignment as follows:

   a. Measure the length of (a) and (b) to the centers of bolt holes. They MUST BE EQUAL. If they are not equal, slide the aft and forward ends of the engine equal amounts in opposite directions to obtain equal lengths for (a) and (b).

   b. Recheck Step 6. If Step 6 is not as specified, adjust and recheck Step 7a. Continue this process until both Steps 6 and 7a are as specified.

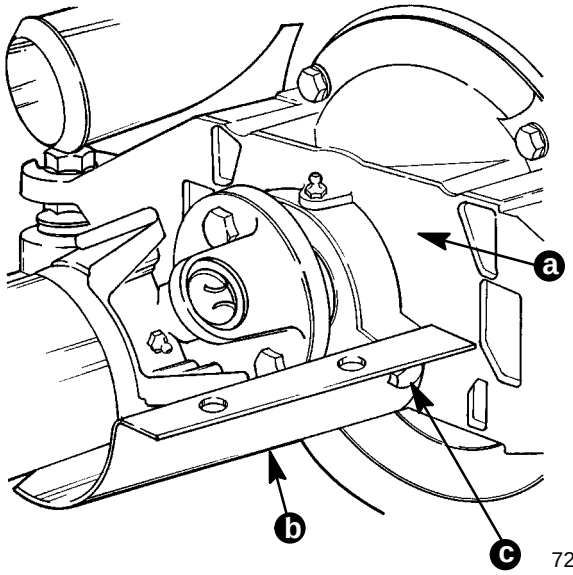



70246

**These Dimensions Must Be Equal**

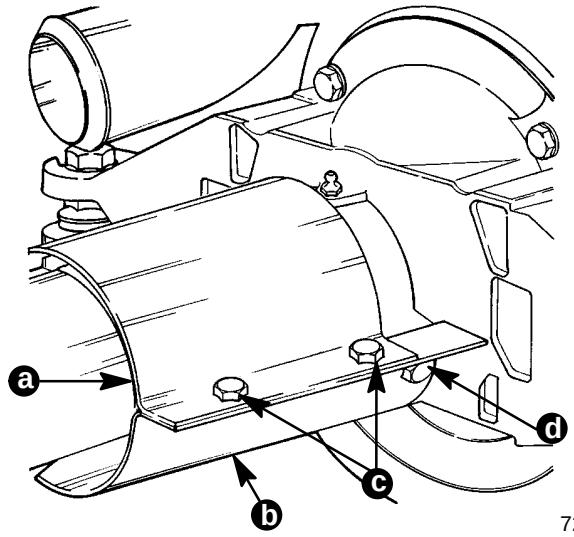
8. After engine has been aligned correctly, fasten front and rear engine mounts to stringers. Tighten mounting bolts securely.

9. Apply Loctite 271 to threads of bottom drive shaft shield retaining screws and install bottom shield on engine end as shown. Torque screws to 30 lb. ft. (41 N•m). Then install top shield as shown. Torque screws and nuts to 30 lb. ft. (41 N•m).



72028

a - Shaft Housing
b - Bottom Shield
c - Screws (3 Used - Two Hidden in This View) (Use Loctite 271)



72033

a - Top Shield
b - Bottom Shield
c - 4 Screws/Nuts (2 Hidden)
d - 3 Screws (2 Hidden)

**Engine End Shown**

10. Proceed to “Engine Connections” section instructions following.